

Observations on the Development of Actinia.

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The author did not observe the deposition of the ova; all the embryos were furnished with cilia, and consisted of an inner, granular coloured part, and an external layer. It is in the former alone that the changes take place. The embryo is oval, or spherical, and moves rapidly by turning in any direction.

The first change is a sort of indentation which soon produces a cavity. The central mass is then divided into two unequal masses, by two constrictions which proceed from the circumference to the central cavity, and at this period the orifice of the cavity becomes elongated, its extremities corresponding with the middle of each of the two parts. The inequality of this first division is followed by a similar irregularity in the following subdivisions until twelve are produced.

The largest of the two parts first divides into three, when the embryo presents four lobes. The smaller portion then divides into three, and six divisions are formed. The two lobes of the larger portion nearest to the small one afterwards divide into two, forming eight lobes; the extremities of the mouth always corresponding with the median lobes of the two original divisions, which now contain, the one five, the other, three subdivisions. The two lobes of the larger portion nearest to the original constriction now divide into two, and the two new lobes are again halved, until the whole consists of twelve divisions.

At this period the young *Actinia* is very contractile, and often changes its form; it moves in every direction, but always keeps the mouth in front. The lobes then become nearly equal, and the tentacles begin to make their appearance. They appear at first as tubercles, to the number of six, each corresponding with the cavity of a lobe. The two first are situated at the two extremities of the mouth at the middle of the two original portions. Before the six first tentacles have acquired any great development, six other tubercles make their appearance between them, forming the second circle.

From this moment the mode of multiplication changes; a new tentacle is developed between each pair, so that the third circle has twelve, the fourth twenty-four, the fifth forty-eight, the sixth ninety-six, &c. The multiplication of the cells always precedes that of the tentacles, which are only to be regarded as their external appendages. Their increase takes place in the following manner:—At the middle of the last-formed cell, a partition or constriction is seen, which at first appears simple, but soon becomes double, and the laminae of which bound three cells—two lateral and one central, the latter corresponding with the old cell, which is thus separated from those with which it was previously contiguous by two new cells produced at its expense. The consequence of this mode of development is that each cell has *two partitions*, but that the last cycle is always formed of compartments without proper lateral walls, for those which bound

them belong on the one side to a cell of a certain age, on the other to a cell of the preceding cycle.

The fact is proved by the development of the intestiniform masses borne by the free margins of the partitions in the ventral cavity. The six first pairs of bundles are developed on the twelve partitions, which bound the six primitive cells, corresponding to the six first tentacles; six other pairs are then developed upon the twelve dissepiments of the six cells of the second cycle; and afterwards twelve pairs appear on the twenty-four partitions of the third cycle. It is easy to see that the nearer the bundles approach the centre, the older they are.

All the work of division appears to go on in the central portion of the embryo, whilst the envelope, which forms a regular cutaneous layer, is gradually enlarged without taking any part in the formation of the partitions.—*Comptes Rendus*, August 28, 1854, p. 434.

METEOROLOGICAL OBSERVATIONS FOR NOV. 1854.

Chiswick.—November 1. Dense fog: very fine. 2. Foggy: hazy: very fine. 3. Fine: clear. 4. Overcast: fine. 5. Cloudy. 6. Clear and very fine. 7. Foggy: cloudy. 8. Overcast: fine. 9. Clear and cold: sharp frost: rain. 10. Fine, but cold: rain. 11. Slight rain: cloudy: fine. 12. Fine: frosty at night. 13. Foggy: fine. 14. Densely clouded: heavy rain. 15. Heavy rain: fine: rain. 16. Rain: foggy at night. 17. Foggy: rain: overcast. 18. Densely overcast and windy. 19. Overcast: clear and cold. 20. Cloudy: clear and cold: fine. 21. Overcast. 22. Clear: densely clouded: clear. 23. Fine: cloudy: sharp frost. 24, 25. Cloudy and cold. 26. Clear: overcast. 27. Foggy. 28. Overcast: rain. 29. Cloudy and fine. 30. Clear: rain at night.

Mean temperature of the month	39°·35
Mean temperature of Nov. 1853	40·14
Mean temperature of Nov. for the last twenty-eight years ...	43·07
Average amount of rain in Nov.	2·38 inches.

Boston.—Nov. 1. Fine. 2. Cloudy. 3. Fine. 4. Fine: rain P.M. 5. Cloudy. 6, 7. Fine. 8. Cloudy. 9. Fine: snow and rain A.M. and P.M. 10. Fine: rain P.M. 11. Fine. 12. Fine: rain P.M. 13. Cloudy. 14. Cloudy: rain A.M. 15, 16. Rain A.M. and P.M. 17. Rain A.M. 18. Cloudy: rain P.M. 19. Fine: rain A.M. and P.M. 20. Cloudy. 21. Cloudy: rain A.M. and P.M. 22, 23. Cloudy. 24, 25. Cloudy: rain A.M. and P.M. 26, 27. Fine. 28. Cloudy: rain P.M. 29. Fine rain A.M. 30. Cloudy.

Sandwick Manse, Orkney.—Nov. 1. Showers A.M.: cloudy P.M. 2. Rain A.M.: clear P.M. 3. Bright A.M.: showers P.M. 4. Cloudy A.M.: rain P.M. 5. Cloudy A.M. and P.M. 6. Cloudy A.M.: showers P.M. 7. Showers A.M. and P.M. 8. Showers A.M.: snow-showers P.M. 9. Snow-showers A.M.: sleet-showers P.M. 10, 11. Cloudy A.M.: clear P.M. 12, 13. Cloudy A.M. and P.M. 14. Cloudy A.M.: cloudy, drops P.M. 15. Showers A.M. and P.M. 16. Showers A.M.: rain P.M. 17. Drizzle A.M.: damp P.M. 18. Fine, cloudy A.M.: showers P.M. 19. Fine, cloudy A.M.: clear P.M. 20. Damp A.M.: showers P.M. 21. Showers A.M. and P.M. 22. Rain A.M.: showers, aurora P.M. 23. Clear, frost A.M.: snow-showers frost P.M. 24. Snow A.M. and P.M. 25. Snow, thaw A.M.: thaw, rain P.M. 26. Fog A.M.: cloudy P.M. 27. Cloudy A.M.: showers, sleet P.M. 28. Showers A.M. and P.M. 29. Showers A.M.: sleet-showers P.M. 30. Clear A.M.: sleet-showers P.M.

Mean temperature of Nov. for twenty-seven previous years .	42°·67
Mean temperature of this month	42·05
Mean temperature of Nov. 1853	44·87
Average quantity of rain in Nov. for thirteen previous years	4·25 inches.